Running Head: HAPI-Child

Psychometric Properties of The HAPI-Child: An Instrument Developed to Determine Service Eligibility and Level of Functioning In a State Mental Health & Substance Abuse Service System[1]

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Abstract

The HAPI-C was developed for use within a public mental health system to assess a youth's ability to manage community functioning in an age appropriate manner in order to determine service eligibility and to document critical service outcomes. Study 1 tested and confirmed the proposed factor structure, and trimmed or refined items to meet the psychometric criteria set by an advisory panel (CFI $\geq$ .97 and RMSEA $\leq$ 0.04) across 737 children aged 5 to 17 and within two age subgroups, those under 12 and $\geq$ 12 years. Study 2 was conducted in three Phases. Phase 1 confirmed the factor structure of the revised scale on a second sample (n = 781). Internal item consistency within each multi-item factor ranged from .74 to .85. Phase 2 assessed and confirmed the criterion validity of the factor scores in predicting a youth's Global Assessment of Functioning (GAF) score and a youth's living setting and produced evidence of the predictive validity of the Reliance on services item to predict service utilization. Phase 3 demonstrated the HAPI-C's ability to detect outcome change among 529 children still in service after 90 days (p < .05). Study 3 tested the inter-rater reliability for 27 children served within state operated facilities (ICC's from .76 to .96).

Psychometric Properties of The HAPI-Child: An Instrument Developed to Determine Service

Eligibility and Level of Functioning In a State Mental Health & Substance Abuse

During the past decade, children's social service systems have undergone substantial

reform efforts designed to improve treatment effectiveness, and increase fiscal and practical

accountability among the providers and agencies serving children and youth with emotional

difficulties. In the children's mental health field, for example, there has been increasing

recognition of the need to document improvements in both the quality of care and the functional

outcomes of service recipients (Hodges & Wotring, 2000). This development has occurred in

part because of the substantial expenses associated with residential placements for children with

the most serious needs (Foster, Kelsch, Kamradt, Sosna, & Yang, 2001) and the perception that

these costly treatments are used due to a lack of available community alternatives rather than the

fact they represent the most appropriate placement for these children (Anderson, 2000;

Duchnowski, Hall, Kutash, & Friedman, 1998; Knitzer, Steinberg, & Fleisch, 1990). Moreover,

the rapid movement toward managed care in the children's mental health field has created a

complex interplay between service funding and measured outcomes that continues to fuel reform

and accountability efforts (Rosenblatt, Wyman, Kingdon, & Ichinose, 1998).

A wide variety of assessment instruments have been developed to evaluate the mental

health needs of children and adolescents. In some respects, this variety reflects the diversified

approach researchers and clinicians have taken in responding to the mental health needs of

children, which in turn, has shaped both assessment and treatment approaches. Although

traditional mental health "assessment" methods, such as the DSM-IV (American Psychiatric

Association, 1994), typically have focused on categorical identification, researchers have found

that diagnosis is not necessarily related to functioning level and may be only somewhat helpful

when choosing specific treatments (Hodges & Gust, 1995). Such limitations in traditional assessment practices have led researchers and clinicians to seek improved assessment frameworks and instrumentation that can better illuminate the specific challenges and needs of children with emotional and behavioral problems, and guide the planning of individualized services. Furthermore, strengths-based approaches to practice, such as systems of care (Stroul & Friedman, 1986), have created the need for assessment instruments that measure competencies within the context of specific social domains, including home, school, and community settings (Anderson & Mohr, 2003; Rapp, 1998).

In the public sector, assessment has important implications for policy makers and service providers facing the challenge of adequately and equitably distributing scarce resources (Rosenblatt et al., 1998; Bickman, Nurcombe, Townsend, Belle, Schut, & Karver, 1999). Assessment instruments that are biased or ineffective may produce unfair or sub-optimal funding patterns that preclude some individuals from receiving treatment if they are inappropriately deemed ineligible. The use of assessment results to distribute funding among clients also creates the potential that clinicians may "assess" or "diagnose" based on securing maximum funding or, conversely, that results will be used to incorrectly classify individuals who need services as ineligible for treatment in order to reduce expenditures. Inadequate assessment also makes it difficult for service providers to understand a child's mental health needs, possibly leading to the provision of inadequate or inappropriate services (e.g., Anderson & Mohr, 2003; Illback, 1994). As the role and importance of assessment has expanded over the past decade, several concerns regarding the use of traditional assessment instruments within the public service sector have been identified, including: (1) the reliability and usefulness of instruments in real-world clinical settings (e.g., Bickman, 1997), (2) the influence of type of service setting, training and

monitoring on assessment results; (3) the validity and usefulness of instruments within demographic (e.g., race, ethnicity, gender), diagnostic, and setting subgroups (e.g., urban vs. rural); (4) the effectiveness and reliability of instruments designed to screen clients for treatment eligibility, (5) the ability of instruments to predict service utilization and costs, (6) the identification of reimbursement levels for providers, and (7) the development of instruments that can be used to provide a basis for state and local agencies to monitor service delivery and effectiveness (e.g., DeLiberty, Newman, & Ward, 2001). This paper reports on the development of an instrument designed to address many of these concerns.

Study 1

Overview

Development of the HAPI-Child. In an effort to guide social services policy development and inform funding distribution decision-making, Indiana, like other states, has been moving toward budgeting that is based on level of need and outcome accountability. Specifically, the goal is for State-contracted providers to be accountable for monitoring costs and improving the outcomes of clients whom they serve. As part of these efforts, the Indiana Division of Mental Health and Addictions (IDMHA) has been developing a system for funding managed care providers in which the level of reimbursement from the State (in addition to that which is collected from Medicaid) is based upon the consumer's ability to manage their day to day functioning in the community (DeLiberty et al., 2001; Newman, McGrew, DeLiberty, & Tejeda, 2001). The purpose of this paper is to review the development and implementation of an instrument that could be used to determine the eligibility of a youth to receive state funded services from the service system, and to evaluate and report aggregate changes in behavior over time in a "report card" on service providers.

An advisory panel made up of key stakeholders supervised the instrument development. The advisory panel identified critical features and functions that an instrument needed to meet IDMHA requirements: (1) ability to predict the degree to which children aged 3-17 were in need of services in order to maintain, or attain (if not currently residing in a community setting) functioning in the community; (2) ability to determine eligibility for service; (3) ability to identify the appropriate level of reimbursement for use by the IDMHA; (4) ability to produce change scores that could be used in a service provider report card, e.g., describing the average changes following services for consumers with similar clinical characteristics; and (5) usefulness in the real world setting of public mental health providers, i.e., the instrument should be user friendly, time efficient, and demonstrate reliability and validity when used within a community mental health provider setting. These ideals aligned with the overall theme of "recovery" recommended by the advisory panel that oversaw the development of a similar adult instrument (DeLiberty et al., 2001; Newman et al., in preparation). In addition, the panel recognized that the instrument could not be a substitute for a full psychosocial or medical assessment, but should be sufficiently thorough and well documented to justify the level of service and reimbursement, and allow for trained clinical auditors to verify assigned ratings.

Initially, the Hoosier Assurance Plan's Advisory Panel recommended that the state adapt the Child and Adolescent Functional Assessment Scale (CAFAS: Hodges, 1996). Accordingly, a *revision* of the CAFAS, the CAFAS Mini-scale, was developed to help meet the specific needs of Indiana, by partitioning the traditional subscales of the CAFAS into smaller domains or mini-scales, adding new subscales (e.g., Reliance on services), and adding new items or modifying existing items (especially to extend applicability of the scale to children aged 3 – 5). Dr. Kay Hodges, together with the Advisory Panel, were the primary developers of the Indiana CAFAS

Mini-scale version. However, in a series of pilot studies, the CAFAS mini-scale failed to meet the performance criteria specified by the advisory panel. In a sample of 967 children, for example, the CAFAS Mini-scale displayed stable factor structure, but low to poor internal consistency and interrater reliabilities, and failed to classify youths into stable cost groups over time (see DeLiberty et al., 2001).

Following the failure of the CAFAS mini-scale, the advisory panel revisited the requirements for the child instrument, adding three more: (1) The instrument should parallel the adult instrument (HAPI-Adult), which was implemented statewide after a successful 3-year field test (DeLiberty et al., 2001). In particular, the format of the adult and child instruments should be similar[3], and should use a conceptual framework similar to the adult scale, i.e., evaluating the child's ability to manage age appropriate day-to-day functioning and growth in the home, the school and the community. (2) In addition to assessing the child, the instrument should assess the family context; specifically, the ability of the family to support the child's growth and ability to function in an age appropriate manner. (3) Based on the suggestions of Bickman and his colleagues (1999), the panel identified desirable client outcome domains for the new instrument.

A review of the literature failed to identify potentially appropriate child instruments that could meet all of the objectives set by the advisory panel and the IDMHA. Accordingly, the panel charged the research team to create an instrument that covered the specified assessment domains, using the format and conceptual framework of the HAPI-Adult, that assessed both the family and individual context, that could be used to determine eligibility for service, identify reimbursement level, and produce change scores useful for a report card of services, and that was reliable and valid when used in the real world setting of public mental health services.

Based on the aforementioned requirements of the advisory board, a pilot instrument was constructed. Next, criteria for determining reliability and validity were identified, as were the procedures for conducting the pilot study. The initial item set was then modified and edited based on advisory board feedback prior to field-testing. A proposed factor structure for the pilot instrument was identified: School (6 items), Family (4 items), Affective Symptoms (3 items), Abuse/Neglect (2 items), Risk/Criminal Behavior (2 items), and Thinking (2 items). In addition, a Substance Use factor was projected to be part of the factor structure for children over age 12. Age 12 was determined to be the cut off from earlier experience with the CAFAS Mini Scale over the prior 3 years (DeLiberty et al., 2001). Single items were added to assess the child's health, suicide ideation, tobacco use and the child's reliance on services to maintain functioning in the community. All items were rated on a 7-point scale, with individual anchors given for each level of each item. Study 1 was designed to assess whether the proposed factor structure was tenable, and to make the pilot instrument more efficient by trimming and/or modifying the existing items.

Method

The pilot instrument was administered once by trained CMHC staff to a sample of 723 children, ages 6 to 17 (366 were < 12 years and 371 were 12 to 17.99 years, 35% were females, 73% were white/non Hispanic, 22.8% African American, 2.8% Hispanic and the remainder "other"), from July though September of 2000. The youths were enrolled in 14 different programs, chosen to represent a broad cross-section of settings (e.g., rural, suburban and urban), programs types (e.g., inpatient, residential, intensive outpatient, and outpatient), and living arrangements (e.g., living with one or both parents, foster home). Ten of the providers were community programs, including five that offered outpatient and residential services, four that

offered outpatient services only, and one that offered residential services only. The remaining

four were state hospital programs for youths.

A sampling plan design was developed both for the study as a whole and for each

individual site. The design specified the number of children targeted for sampling within two

broad age (over and under 12) and demographic groups (gender and race) for each site. The

sampling plan targeted an equal number of children older and younger than 12. Proportional

sampling was used to obtain a sample of children representative of the demographic

characteristics of those typically served by the IDMHA. Finally, to assure sufficient power to

allow comparisons across treatment settings, the design over sampled children served in inpatient

and residential settings.

A training manual was created to provide additional detail on how to rate items.[4] Prior to

pilot testing; all raters were trained to a criterion (greater than 70% correct ratings on a minimum

of five training vignettes). Raters were individual therapists with regular responsibility for

conducting intake assessments at their sites. In somewhat less than half the cases, the raters also

served as therapists for the youth. All raters had at least a bachelor's degree in a social service

related area (e.g., psychology, social work). Raters were trained to administer the HAPI-C using

a semi-structured interview, with probe questions provided to facilitate the collection of

information to complete ratings. Raters also were required to provide descriptions of the

evidence supporting each rating. Interviews were conducted with the child, and, when

appropriate, with caregivers and other knowledgeable informants. Evidence for ratings could be

provided from direct observation or from a report from the child, a family member, a school

official, the criminal justice system, or an available written report. All assessments were

reviewed for completeness, first by the supervising clinician (adapted from the current procedure

used for the HAPI-Adult instrument) and then by the project's research staff. Corrections were made, if needed, before being forwarded to the data processing center. The data were then entered (and verified) into the research database.

Results

The proposed 6-factor structure was confirmed both for all children and separately for children aged < 12 years and ≥ 12 years, as demonstrated by good to excellent Comparative Fit Index (CFI) ≥ .97 and estimated values of Root Mean Squared Error Adjust (RMSEA), all ≤ 0.04. Item analyses were then conducted and internal consistency statistics (ICCs) showed fair to good reliability for the individual scales: .64 for Risky/Criminal Behavior, .68 for Abuse/Neglect, .76 for Thinking, .82 for Affective Symptoms, and .87 for both the School and the Family factors.

Because a major concern of the advisory board was the length of time needed to administer the 42-item pilot instrument, priority was given to shortening the instrument. As a result, nineteen items were deleted from the pilot instrument. Reasons for deletion included: (1) item was deemed redundant by the advisory board (i.e., other items covered the factor sufficiently with high inter-item correlations, r > .50), (2) the item loaded weakly on its intended factor (i.e., factor loading less than .45), or (3) the deletion of the item improved factor or scale reliability without a loss to the conceptual underpinnings of the factor. In addition, three items exhibiting marked ceiling effects with few ratings below seven (no evidence of problem) were excluded from the factor structure: abuse (15%), neglect (19%), and suicide (6%). However, the abuse and neglect items were retained as individual items.

Based on the findings from the pilot, the advisory panel recommended a revised and trimmed 23-item instrument with the following structure: (a) Five psychosocial factors (15

items): Symptoms of Distress and Mood factor (3 items), Thinking factor (2 items), Family

Interaction factor (3 items), School Interactions and Performance factor (4 items), and Disruptive

Behaviors factor (3 items); (b) One substance abuse factor rating the severity of use of alcohol,

drugs or both (3 items): for the last 30 days (plus a listing of the frequency/amount of use and

costs per month for purchasing alcohol, drugs, or both), for the past 2 to 12 months, and lifetime

use; (c) Five additional single items assessing: abuse by someone in the household, neglect by a

significant other in the household, health/physical status of the child, tobacco use with estimates

of amount of use per week, and an estimate of the reliance on services to maintain community

functioning.

<div align="center">Study 2</div>

Study 2 was carried out in three Phases. All three phases used the same client sample.

The phases are described below.

<div align="center">Phase 1</div>

Overview

Phase 1 was designed to confirm the factor structure from Study 1 and to estimate the

psychometric characteristics for the revised 23-item scale on a second sample of youth (n = 781)

obtained from the same 14 mental health programs. Most of the raters were the same as those in

Study 1. Phase 1 also attempted to confirm the factor structure for 529 youth that were still in

service in these programs after 90 days and could be assessed a second time.

Method

Sample. The HAPI-C was administered to 781 youth from October through December of

2000. To assess the factor scores at two points in time, a second administration of the HAPI-C

was performed for the 529 youth who were still in service after 90 days and could be reassessed

(67.7% of those initially assessed). Based on the 133 youths no longer in service at Time 2, for whom we have specific data, 35% were unable to be located in the community (usually there had been no contact since initial session), 22% had chosen to discontinue or refused treatment, 13% had moved, 7.5% were discharged or had their cases closed, and 6% were classified as other/unknown. In addition, 16.5% were lost when a therapist transferred at one site. The same training procedures, interview, and data processing/quality control procedures described for Study 1 were employed for Study 2. The sampling design used for Study 2 also paralleled the one described for Study 1.

<div align="center">Results</div>

Demographic Characteristics

The demographic characteristics of the 781 children assessed at Time-1 are summarized in the middle column of Table 1. The right hand column shows the results for the 529 youth assessed after 90 days. The data on one youth were not analyzed because of missing data elements discovered after data collection ended. No statistically significant differences in demographic characteristics were observed between the 781 assessed initially and the 529 assessed after 90 days, even when setting the type I error rate at a liberal value of 0.25. Moreover, the sample characteristics (Table 1) closely parallel the demographic profile of the population of more than 22,000 youths who received services in Indiana from July 1, 2000 to June 30, 2001, the data collection period.

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Insert Table 1 here.

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Confirmatory Analysis of Predicted Factor Structure

A confirmatory factor analysis was performed to test the five psychosocial factor model proposed by the advisory panel. The factor structure for Time-1 is shown in the top panel of Table 2, the bottom panel shows the Time-2 factor structure. Item factor loadings are shown for three different age groups: a) all ages; b) children under age 12; and, c) children aged 12 to 17.99 years. The comparative fit index (CFI) exceeded the ideal value of 0.95 (Hu & Bentler, 1998) for all three age groups, both at Time-1 (.973 to .983) and at Time-2 (.986 to .992). The Root Mean Square Error Adjusted term (RMSEA) ranged from .043 to .059 across age groups for Time-1 and .034 to .044 for Time-2, where a RMSEA $\leq$ 0.09 is considered to be acceptable and $\leq$ .05 is ideal (Hu & Bentler, 1998).

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Insert Table 2 here.

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The item-factor loadings were very strong ($\geq$ .50) for four of the factors and acceptable for the remaining factor (i.e., the Family Factor) at both Time-1 and Time-2 (see Table 2). Two of the three items (*Family Support of the Child's Growth* and *Family's Sharing of Time and Resources*) within the Family factor displayed lower, although still acceptable, loadings (.39 to .45 at Time-1 and .45 to .51 at Time-2). In contrast, the factor loadings for the third item on the Family Factor, "*Child's Effects on Family Interactions*" were very strong, ranging from .82 to .86. It is possible that the Family factor may represent two closely related factors, such that satisfactory to strong measures of confirmatory fit were obtained, but with two items more highly correlated with each other than with the third. This possibility is consistent with the slightly lower internal consistencies obtained for the Family factor (see the footnote to Table 3).

Internal Consistency

Table 3 displays the reliability coefficients (Cronbach's alpha, ∀, and the Inter Class Correlation Coefficient, ICC) for each of the factors. A value ≥ 0.70 is considered to be acceptable and a value ≥ 0.80 is considered to be very good (Nunnally, & Bernstein, 1994). The reliability coefficients were acceptable to good across the two age groups and two time points for four of the five psychosocial factors: School (.809-.842), Affective Symptoms (.815-.868), Thinking (.700-.793), and Family (.698-.798). As mentioned above, one of the three items within the Family factor ("Effects of the child's behavior on the family's interactions") slightly decreased the internal consistency of that factor at Time 2, i.e., dropping the item increased the value of the alpha coefficients and the ICCs (see footnote to Table 3). However, because the internal consistency was minimally acceptable with the item, and given that the item was deemed necessary to enable the HAPI-C to meet the requirements of the accreditation agency for an outcome measure (The Joint Commission on Health Organizations) and could be justified on theoretical grounds from a family systems perspective, the item was retained.

Internal consistency coefficients for the fifth psychosocial factor, Disruptive Behavior, were acceptable for five of the six Time and age groups (ranging from .712 to .764), but dipped to .667 at Time-1 for children under 12. However, no single item was identified as influencing this dip in reliability within this age group at Time-1 and no comparable dip in reliability was observed at Time-2 for the factor.

Internal consistency also was assessed for the three items within the Substance Abuse factor for the 339 youth at Time-1 and 233 youth at Time-2, ages 12 to 17.99 years. The analysis was not performed for children under 12 because insufficient numbers of children were identified ($n = 2$) with a substance abuse problem in that age group. The Substance Abuse factor

displayed good internal consistency reliability across the two time periods: Cronbach's alpha and ICCs ranged from .829 to .856.

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Insert Table 3 here.

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Taken together, the results of Study 2 indicate that the HAPI-C has a stable factor structure across time, with good internal consistency of the five psychosocial factors and the Substance Abuse factor. The advisory panel deemed the reliability coefficients as quite acceptable to very good given the small number of items on each factor.

Phase 2

Overview and Method

The next step was to provide initial evidence of the concurrent validity of the instrument as an indicator of overall functioning, both using the full sample and within specific client subgroups. For the first set of analyses, the Global Assessment of Functioning (GAF) scale (DSM-IV Axis V) served as the criterion measure (American Psychiatric Association, 2000). Subanalyses within client subgroups served to demonstrate the generalizability of the scale, by verifying the validation within important subgroups identified by IDMHA. We expected the GAF score to correlate with the psychosocial factors, both collectively and individually, across all client subgroups. We also expected that the GAF score would correlate with the reliance on services factor. We did not have specific client subgroup hypotheses for these predictions. Note that the same rater provided both the HAPI-C and GAF ratings.

As a further indication of validity, we assessed the ability of the scale to differentiate between individuals living in/being treated within different settings: a) living with one or both

parents; b) living with a relative or friend, c) living in a foster care setting; and d) living in any supervised residential setting such as a group home, a residential treatment facility, an inpatient hospital, or a detention center. We expected that living/treatment setting would be related to the sum of the psychosocial factors, to the reliance on services factor, and to the individual psychosocial factors.

Results

The first set of analyses focused on the relationship of the five psychosocial factors and the Reliance on services item to the "Global Assessment of Functioning" (GAF) score at the time of the initial assessment (Tables 4 & 5). Table 4 presents the results of three regression analyses conducted independently: a) for all cases; b) for new enrollees to the Indiana Public Mental Health System (MHS) at Time-1; and c) for current enrollees to the MHS at Time-1. Table 5 presents the results of four additional regression analyses conducted independently for four categories of living arrangement at Time-1: a) living with one or both parents; b) living with a relative or friend, c) living in a foster care setting; and d) living in any supervised residential setting such as a group home, a residential treatment facility, an inpatient hospital, or a detention center. Although we would have liked to break out the data within the fourth category (d) into its obvious subgroups, the sample sizes within these subgroups were too small to produce meaningful results. To be consistent with the longitudinal analyses reported in Phase 3, analyses are reported for individuals with complete data at Time 2. Analyses using the full Time 1 sample were virtually identical.

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Insert Tables 4 and 5 here.

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GAF criterion with full sample. The regression analysis indicated that there is a strong concurrent relationship between the collection of the five psychosocial factors and GAF scores ($R = .47$, $R^2 = .27$). When factors were considered individually, only the Affective Symptom and the School Behavior factors were significant individual predictors (standardized $\beta = .168$ and .313 respectively). The *Reliance on Community Services* item also showed a moderately strong relationship to *GAF* at Time 1 (standardized $\beta = .308$, $R^2 = .09$).

GAF criterion by enrollment Status. The five psychosocial factors collectively were significantly related to the *GAF* both for the 209 youths newly enrolled at the time of the first assessment ($R = .48$, $R^2 = .23$) and for the 319 youth who were currently enrolled at the time of the initial assessment ($R = .49$, $R^2 = .24$). The pattern of individual factor predictions was similar to those found using all youths. The relationship of the *Reliance on Community Services* item to *GAF* scores was weak but significant for new enrollees (standardized $\beta = .24$, $R^2 = .06$), and moderate for youth currently enrolled (standardized $\beta = .37$, $R^2 = .13$).

GAF criterion within Living Arrangement. The five psychosocial factors taken together were significantly related to the *GAF* scores (R between .40 and .65) across all four living arrangement categories (see Table 5). However, only one of the individual factors was consistently predictive across all four living arrangements. The School factor was a significant predictor of the *GAF* for all 4 settings (R ranged from .38 to .52). The Affective Symptoms factor was a significant predictor of the *GAF* for youth living with relatives or friends ($R = .50$) or in a foster home ($R = .45$). In contrast, neither the Thinking nor the Disruptive Behavior factors were predictive of *GAF* scores for any of the living arrangements.

The *Reliance on Community Services* ratings at Time-1 were significantly related to GAF scores for three of the four levels of living arrangements (see Table 5). There were moderately

strong relationships for youth living with one or both parents ($R = .34$, $R^2 = .11$) or with a friend

or relative ($R = .35$, $R^2 = .12$), and a weaker, but still significant relationship, for youth living in

foster care ($R = .19$, $R^2 = .03$). However, the relationship between GAF and Reliance was non-

significant for youth living in more restrictive settings such as group homes, residential treatment

and inpatient facilities ($R = .12$, $R^2 = .01$). The latter non-significant relationship was likely

affected by range restriction in the Reliance on services item, because all of the youth were in

restrictive placements reserved for those who require the most intensive services.

Living Arrangement criterion. A multivariate analysis of variance was conducted with the

level of living arrangement as the independent variable, and the ratings of *Reliance on*

Community Services, the five psychosocial factor scores individually and the average factor

rating (averaging across the five psychosocial factors) as the dependent variables. The overall

multivariate F-test was significant, $F(18, 1437) = 3.769$, $p < .001$, with a partial $\eta^2 = .043$. When

univariate F-tests were examined, significant differences in placement category were found for

the *Reliance on Community Services* factor, $F(3, 513) = 8.526$, $p < .001$, partial $\eta^2 = .047$, for the

average of the five psychosocial factors at baseline, $F(3, 513) = 6.116$, $p < .001$, partial $\eta^2 = .035$,

and for three of the five psychosocial factors considered individually: *School*, $F(3, 513) = 4.559$,

$p < .01$, partial $\eta^2 = .026$; *Family*, $F(3, 513) = 4.042$, $p < .01$, partial $\eta^2 = .023$; and *Disruptive*

Behavior, $F(3, 513) = 10.971$, $p < .001$, partial $\eta^2 = .060$. In all cases, children in residential or

group home settings exhibited the lowest means and children living with one or both parents or

living in a foster care setting exhibited the highest mean scores. For example, using the average

of the five psychosocial factors, children in residential and foster care settings had a mean score

of 4.4 and children living with one or both parents or in a foster care setting had an average score

of 5.1, with a pooled standard deviation of 1.2. Children living with a friend or relative had an

average factor score of 4.7.

<div align="center">Phase 3</div>

Overview

A major objective in developing the HAPI-C was to use scores on the instrument to

describe changes in functioning over time. These data would eventually be used in a report card

that the Indiana Division of Mental Health and Addictions wanted to develop to compare

services' outcomes among providers. The purpose of Phase 3 was to test the ability of the HAPI-

C to detect changes over time and to predict outcomes (i.e., predictive validity). In this instance,

the study was designed to determine whether the factor scores would be sensitive to change and

predictive of outcomes for those youth still in service after 90 days. A limitation of these

analyses is that they do not consider at least two groups of youth: (1) those not in service after 90

days because the family or the service provider felt that satisfactory improvement had been

realized, and (2) those who discontinued service for the reverse reason, i.e., there was sufficient

dissatisfaction with the impact of services that the parents or the child discontinued services.

We had several predictions for these analyses. We expected that the sum of the five

psychosocial factors would be sensitive to change and predictive of outcomes, and that these

relationships would be stronger in individuals who were new enrollees. We also expected that,

in general, the individual psychosocial factors would be sensitive to change and predictive of

outcomes, but less consistently. We expected that the substance abuse factor would be predictive

of 90-day outcomes in GAF, again with the strongest relationships among new enrollees.

However, because the Substance Use/Abuse factor combines three items into a single factor

score: 1) Use over the last 30 days; 2) Use over 2 to 12 months in the past; and 3) Lifetime use,

two of which would not be expected to change over a 90-day period (i.e., *Lifetime Use* and *Use 2 to 12 months ago),* we expected that the ability of the substance abuse factor to register change in GAF scores would be quite limited. In part because of this expected insensitivity to change, we also examined the relationship between changes in substance abuse functioning and the average of the five psychosocial factors, which we expected to be more sensitive to changes related to substance abuse functioning. Finally, we expected that clients' Reliance on services rating at Time 1, should predict the number of services they received between Time 1 and Time 2.

Method

The first set of regression analyses examined the ability of changes in the five psychosocial factors to predict changes in *GAF* ratings (the outcome variable) from the initial assessment to the 90-day assessment for all youths, new enrollees, and current enrollees (see Table 6). A second set of regression analyses examined the ability of the five psychosocial factors to predict changes in *GAF* ratings separately within the four living settings (Table 7). A final set of regressions examined the relationship between changes in the Substance abuse factor to changes in GAF scores and in the average of the five psychosocial factors for all youths, new enrollees and current enrollees (Table 8). However, because there were only 93 adolescents over the age of 12 who had a Substance Use/Abuse factor score less than 7 at the time of the initial assessment (indicating some level of substance use problem), analyses within types of living setting were deemed impracticable. Prior to running the regression analyses, change scores were calculated (Time-2 score minus Time-1 score) for each of the HAPI-C predictor or criterion factors, and the *GAF* criterion measure.

To test the predictive validity of the Reliance on Services item, correlations were calculated between the Reliance on Services item and the total number of days of intensive,

residential-based services each youth received. Data on outpatient and clinic-based services were not available for these analyses. The CMHC's reported the number of days of service each youth received during the period between Time 1 and Time 2 in seven separate settings: psychiatric inpatient, residential treatment, group emergency shelter, group home, therapeutic foster care, specialized foster care, and individual home emergency shelter. A Service Total was calculated from the sum of the individual services received across the seven settings. For both the regression analyses described earlier and the correlations with the Reliance on services item, data on 17 youth were lost because of missing information about enrollment or placement data.

Results

The overall regressions between the collection of all five psychosocial factor change scores and *GAF* change scores (R = .35 to .45) were significant for all three samples (Table 6). When changes in individual factor scores were examined, all five factors were predictive of changes in *GAF* scores for the total sample. When restricted to new enrollees, three factors were significantly predictive: affective symptoms (β = .181), family self-management/functioning (β = .153), and school self-management/ functioning (β = .179). For children already enrolled in services at the point of the Time-1 assessment, changes in *GAF* scores were associated with changes in *Thinking* (β = .139) and *Disruptive Behavior* (β = .144).

Predicting change for children in different living arrangements. The four panels in Table 7 describe the relationship of the changes in the factor scores over the 90 day period to changes in *GAF* scores for the four living arrangement categories at the time of the first assessment. The overall regressions between changes in the collection of the five psychosocial factors and change in *GAF* were significant for all four living arrangements. The values of R^2 ranged from .178 for those living with a friend or relative to .255 for those living in a foster home. When changes in

the individual psychosocial factors were examined, for the majority of children living with one

or both parents ($n = 295$), three of the five psychosocial factors were predictive of changes in

GAF scores, with standardized β-values of .271, .173, and .144 for Thinking, Family and School

factors respectively. Changes in Family ($\beta = .193$) and School factors ($\beta = .261$) also predicted

GAF change scores for those living in Foster care settings (as did changes in Affective

Symptoms, $\beta = .174$). However, only the change score for Disruptive behavior was predictive of

changes in *GAF* scores for those living with a relative or friend ($\beta = .364$) or living in a group

home or residential setting ($\beta = .292$).

 Relationship of changes in Substance Use/Abuse with changes in GAF ratings over 90

days (see Table 8). A series of regression analyses were conducted that set the dependent

variable as the change in the Substance Use/Abuse Factor score (Time-2 minus Time-1) and the

predictor variable as either the change in GAF scores or the change in the average of the five

psychosocial factors, for all youths ($n = 93$), new enrollees at Time-1 ($n = 27$), and current

enrollees at Time-1 ($n = 66$). As shown in Table 8, change in substance abuse functioning was a

significant predictor of changes in GAF scores for all youth ($\beta = .286$ and $R^2 = .082$) and for

current enrollees ($\beta = .421$ and $R^2 = .178$), but not for new enrollees. Change in substance abuse

functioning tended to be a stronger predictor of changes in the average of the five psychosocial

factors both for all youths ($\beta = .454; R^2 = .207$) and for youths newly enrolled ($\beta = .720; R^2 = $

.519), but was a somewhat weaker predictor for youths currently enrolled ($\beta = .335; R^2 = .112$)

- -

Insert Table 8 about here.

- -

Relationship of Reliance Score at Time 1 to Service Use. As shown in Table 9, there was a moderate and statistically significant relationship between Reliance on Services at time 1 and the total services received between time 1 and time 2 for all youths (r = -.248, p < .001). When sub samples were examined, Reliance was an even stronger predictor of total services for youths currently enrolled (r = -.318, p < .001), but was a weaker, although still significant predictor of total services, for youths newly enrolled (r = -.147, p < .05). When service settings were examined individually for the total sample, Reliance on Services at time 1 was significantly related to days in a psychiatric inpatient unit (r = -.11, p < .05), days of residential treatment (r = -.11, p < .01), days in a group home (r = -.17, p < .01), days in therapeutic foster care (r = -.11, p < .05), and days in specialized foster care (r = -.10, p < .05) between time 1 and time 2. A similar pattern was found when analyses were restricted to youth currently enrolled (see Table 9). However, for newly enrolled youths, only days in specialized foster care was related to Reliance at time 1 (r = -.149, p < .05).

- -

Insert Table 9 about here.

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Study 3

Overview

Study 3 was designed to provide preliminary evidence of the inter-rater reliability of the HAPI-C, in those instances where two trained clinicians rated the same youth.

Method

The study was conducted at four state hospitals serving children and adolescents (total N = 27). Ratings were completed independently by clinical raters stationed at each site. The

number of rater pairs used varied by sites. At two of the sites, one set of rater pairs did all of the ratings for the site (rating 3 youths at one site and 6 youths at the second). For the remaining two sites, 4 different rater pairs rated 11 youths at the third site, and 3 different rater pairs rated 6 youths at the fourth site. Raters were instructed to base the clinical ratings on material gathered in the semi-structured interview. Raters were hospital therapists responsible for conducting intakes at each site and had at least a Bachelor's degree in a social services area. In most cases, the raters did not also have therapeutic responsibility for the child. Inter-rater reliability was estimated by Interclass Correlation Coefficients (ICC).

Results

The ICCs for the five psychosocial factors were: .90 for Affective Symptoms, .76 for Thinking, .86 for School Behaviors, .92 for Disruptive Behaviors, and .82 for Family. The reliability coefficient for youth 12 years or older on the Substance Use factor was .97. Together with the internal consistency results, these findings provide preliminary evidence that the instrument has adequate reliability.

<div align="center">Discussion</div>

The current report outlines the development and initial validation of the HAPI-C, an instrument designed to assess a youth's ability to self manage their day to day functioning and the ability of the family to support the child's self management of functioning, for use within a public mental health system. Overall, the results were promising. The predicted factor structure was strongly affirmed by the confirmatory factor analysis and by the acceptable to very good internal consistency of items within each factor. Item consistency within factors was matched by strong estimates of item and factor inter-rater reliability. These robust factor-analytic and reliability results, obtained over two large samples of youths across multiple service settings,

provide an important psychometric bedrock for the HAPI-C instrument. We believe that the favorable results concerning the instrument's structure and reliability seemed to be due to three features. The first was the careful crafting of items following structured discussion and feedback from the advisory panel, which helped to achieve close adherence to the overall themes of the instrument and factor and appears to have improved the consistency and clarity of the language used in each item and its anchors. The second was the development and use of a detailed training manual, which will be used in the training and supervision of clinical staff and ideally support the appropriate administration and use of the instrument. The third was the requirement that for every rating, the assessing clinician document the evidence used to support the rating. Rating accuracy was enhanced further because the clinical assessor knew it was possible that an independent clinical auditor might review the linkages between the ratings and the available evidence for each rating. The Indiana Division of Mental Health and Addictions continues to require periodic (re)training and annual random audits of the HAPI-C assessments. Given that these features supporting the use of the HAPI-C are in place, we would expect a strong record of reliability to continue.

There also was preliminary support for the validity of the HAPI-C. With respect to the psychosocial factors, the factor structure was invariant across time (90 days) and across age groups over time. In fact, the two major indices of confirmation (CFI and RMSEA) met or exceeded the criteria that have been recommended by Hu and Bentler (1998). These results provide evidence that scoring the instrument should be the same for children within different age groups. In addition, the five psychosocial factors had strong concurrent relationships with ratings of the GAF (Axis-V). Moreover, the strong relationship of the set of factor scores on the psychosocial section of the HAPI-C to the GAF provides initial evidence that the instrument

should be predictive of the child's overall psychosocial well-being. Likewise, the demonstration of a concurrent relationship between the psychosocial factor scores and living/treatment setting suggests that the factor scores on the HAPI-C could be useful in determining eligibility for and level of service needed. However, the predictive relationship between factor scores and the level of service need is only suggested by these results. The Indiana Division of Mental Health and Addictions is now conducting a three-year field trial to test more thoroughly the validity of this relationship. Finally, the concurrent relationships of the factor scores to the initial GAF assessment also held across all of the major subsets of children that the Advisory Panel had designated as important for use in the field: Enrollment Status and Living Arrangement. Taken together these results provide further evidence that the instrument can validly be used across all of the major subgroups of children served by the mental health service system.

There also was initial support for the concurrent and predictive validity of the Reliance on services item. Concurrently, Reliance at time 1 was related to GAF scores at time 1 overall and within each of the client and setting subgroups. In addition, Reliance on services at time 1 was related in expected ways to the living arrangement at time 1, with those living with parents or friends rated as less reliant on services than those living in foster settings or in group homes or inpatient settings. More importantly, predictively, Reliance measured at time 1 was moderately correlated with the total number of days clients spent in residential services during the 90 days between time 1 and time 2. Reliance also correlated weakly with days spent in individual residential service categories, including psychiatric hospitals and residential treatment.

These predictive findings are particularly important. The two major purposes of the HAPI-C were to be able to document outcomes and predict cost of services. Because residential services represent some of the most expensive service cost categories, these findings suggest that

the HAPI-C will be able to predict costs. However, the ability to predict service use varied by

client subgroup. Reliance on services was a relatively weak predictor of total services for those

newly enrolled, and a much stronger predictor for persons currently in services. Clinicians seem

to be better able to predict service reliance in clients they know well. Thus, it may be better to

obtain Reliance ratings, not at intake, but after some substantial contact with the client. Future

research is suggested to identify the most appropriate assessment window for rating Reliance on

services.

Another critical issue investigated was the ability of the instrument to detect change.

This feature is considered important for three reasons. One, the ability to detect and track

changes in client status over time is critical for an instrument designed to measure outcomes.

Second, it would imply that the change scores could be used for Indiana's annual Service

Provider Report Card, as has been done with the change scores on the HAPI-Adult (DeLiberty,

Newman, & Ward, 2001). Third, this feature would imply that the local programs could use data

from the HAPI-C in evaluation studies that meet the requirements of the accreditation agencies

(JCAHO and CARF) when performing outcome evaluation studies. As noted earlier, the results

indicated that changes in scores on the five psychosocial factors were related to changes in GAF

scores over time, suggesting both that the instrument is sensitive to change over time and that the

changes detected may be valid. These predictive relationships also held across different

residential categories suggesting that the HAPI-C can validly measure change across a variety of

settings. In addition, there was preliminary evidence for the ability of the substance abuse factor

to detect change. Changes in substance abuse functioning over 90 days were related to changes

in overall GAF functioning for all youths and for those currently enrolled, but not for those

newly enrolled. Changes in substance abuse functioning also were related to changes in

functioning as measured by the average of the five psychosocial factors for all subgroups. These findings are supportive of the validity of the substance abuse scale. However, neither of the criteria used are necessarily closely related to the underlying construct—substance use. Moreover, given that two of the three substance abuse items making up the substance abuse factor index long-term functioning, the 90-day change window used likely restricted the ability of the scale to report and detect change. Nevertheless, the results provide initial evidence that the substance abuse factor is sensitive to change and is related to aspects of overall mental health functioning.

Taken together the results of the study were sufficiently positive to the Executive staff of the Indiana Division of Mental Health and Addictions, that beginning July 1, 2001, a three-year field trial was instituted that requires the use of the HAPI-C in determining service eligibility for all children with a serious emotional disorder served by IDMHA providers. The three-year field trail parallels the one described by DeLiberty et al. (2001).

Although the HAPI-C was developed for use in the Indiana public mental health system, it also has broader application as a child and adolescent assessment measure. Bickman and colleagues (1999) exhaustively reviewed available instruments for children and adolescents against a set of ideal criteria and concluded that none met all of their criteria. The critical conclusions reached by these researchers, together with the prior negative experience with the revised CAFAS, led Indiana to choose to develop a new instrument rather than adopting or adapting an existing one. Moreover, the criteria set forth by Bickman and colleagues for an ideal instrument were used to guide the development of the HAPI-C. Accordingly, the HAPI-C includes several characteristics that differentiate it from most other children and adolescent scales, and that recommend its use, including: (1) HAPI-C items are couched in the language of

recovery, adopting a strengths-based emphasis on ability to self-manage, (2) the HAPI-C

includes factors to measure both the ability of the child to self-manage and the supportiveness of

the child's environment to help the child to self-manage, and (3) the HAPI-C includes scales

infrequently included on other scales, i.e., factors measuring physical health, abuse and neglect,

tobacco use, reliance on services, and substance use and abuse. In addition, the HAPI-C was

developed pragmatically, based on the needs of mental health service administrators and

providers, and should have broad applicability in those service settings. A further strength of the

instrument is its ease of use and training. Mental health practitioners representing a broad array

of disciplines and degree levels have been successfully trained to use the instrument. Moreover,

as the current data attests, practitioners seem to be able to apply the instrument reliably and

validly in a mental health service setting.

Finally, as alluded to above, we believe a critical strength of the HAPI-C is its ability to

meet all of the criteria required by the multiple stakeholders represented on the advisory board.

In fact, the active involvement of these stakeholders in its design and development represents a

major asset of the HAPI-C. For example, one influence of active stakeholder involvement was

to insist on an emphasis on strength and recovery themes for the instrument, rather than a focus

on deficit or impairment. As a result, the focus of the HAPI-C was on the child's or the family's

ability to self manage their behavior in support of the child's day to day functioning and age

appropriate growth. Stakeholder involvement also was instrumental in identifying critical

outcome domains, and in shortening and refining both the instrument and individual items.

Overall, we believe this involvement constituted a clear and positive influence on scale

development. Moreover, stakeholder involvement was critical in countering resistance to

adoption of the new HAPI-C instrument, especially following the earlier problems from the system-wide mandate to adopt the CAFAS-miniscale.

Although there is initial evidence for the reliability and validity of the HAPI-C, the evidence clearly is incomplete and preliminary. Further areas of study will be required to fully validate the instrument. One broad concern is the issue of generalizability of the instrument across a range of child variables, such as age, ethnicity, and diagnosis. A child and youth assessment instrument needs to be useful for a variety of different age groups of children. The current study only examined two broad age groups, 6-11 and 12-17 years. Children under 5 were not examined (due to a limited sample size), even though there are an increasing number of children under 5 served by Indiana providers. The possible effect of ethnicity on validity and reliability also is unknown, particularly African-American, Hispanic, and Caucasian ethnicity (the primary ethnic groupings in Indiana). Another very important child variable is diagnosis. The applicability, validity and reliability of the HAPI-C for different diagnostic groups is unknown. A second broad issue is treatment and geographic setting factors. Although we have some evidence that the HAPI-C appears to "work" across settings, we do not know whether it works well within ethnic or age groupings in different geographic areas or living environments. A third critical unexplored issue is construct validity. Although the significant correlations between the sum of the HAPI-C psychosocial factors and the GAF provide an initial indication that the HAPI-C validly measures overall functioning level, the validity of the individual subscales is unknown. Future research will be required to more thoroughly investigate these issues.

References

Achenbach, T.M. (1991). The derivation of taxonomic constructs: A necessary stage in the

development of developmental psychopathology. In D. Cicchetti & S. Toths (eds.),

Rochester symposium on developmental psychopathology: Models and Integrations (Vol.

3, pp. 43-74). Hillsdale, NJ: Erlbaum.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*

(4th ed., Text Revision). Washington, DC: Author.

Anderson, J. A. (2000). The need for interagency collaboration for children with emotional and

behavior disabilities and their families. *Families in Society: The Journal of*

Contemporary Human Services, 81, 484-493.

Anderson, J. A., & Mohr, W. (2003). A developmental ecological perspective in systems of care

for children with emotional disturbances and their families. *Education and Treatment of*

Children, 26, 52-74.

Bickman, L. (1997). Evaluating evaluation: Where do we go from here? *Evaluation Practice,*

18, 1-16.

Bickman, L., Nurcombe, B., Townsend, C. Belle, M., Schut, J., & Karver, M. (1999). *Consumer*

measurement systems in child and adolescent mental health. Canberra. ACT:

Department of Health and Family Services.

Costello, E.J., Angold, A.M., Keller, G.P. (1999). Adolescent outcomes of childhood disorders:

The consequences of severity and impairment. *Journal of the American Academy of*

Child & Adolescent Psychiatry, 38, 121-128.

DeLiberty, R. N., Newman, F. L., & Ward, E. (2001). Risk adjustment in The Hoosier

Assurance Plan: Impact on providers. *Journal of Behavioral Health Services &*

Research, *28,* 1-20.

Drotar, D., Stein, R., & Perrin, E. (1995). Methodological issues in using the Child Behavior

Checklist and its related instruments in clinical child psychology research. *Journal of*

Clinical Child Psychology, 24, 184-192.

Duchnowski, A. J., Hall, K. S., Kutash, K., & Friedman, R. M. (1998). The Alternatives to

Residential Treatment study. In M. H. Epstein, K. Kutash, & A. J. Duchnowski (Eds.),

Outcomes for Children and Youth with Behavioral and Emotional Disorders and their

Families: Programs and Evaluation Best Practices (pp. 55 – 80). Austin, TX: Pro-Ed.

Foster, E. M, Kelsch, C. C., Kamradt, B., Sosna, T., & Yang, Z. (2001). Expenditures and

sustainability in systems of care. *Journal of Emotional & Behavioral Disorders, 9,* 53-62;

70.

Hodges, K. & Gust, J. (1995). Measures of impairment for children and adolescents. *Journal of*

Mental Health Administration, 22, 403-414.

Hodges , K & Wotring, J. (2000).   Client typology based on functioning across domains using

the CAFAS: Implications for service planning. *Journal of Behavioral Health Services &*

Research, 27, 257-270.

Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structures: Sensitivity to

underparameterized model misspecification. *Psychological Methods, 3*, 424-453.

Illback, R. J. (1994). Poverty and crisis in children's services: The need for service integration.

Journal of Clinical Child Psychology, 23, 413-424.

Jensen, P. S., & Hoagwood, K. (1997). The book of names: DSM-IV in context. *Development*

and Psychopathology, 9, 231-249.

Kessler, R. C. & Foster, C. L. (1995). Social consequences of psychiatric disorders I:

Educational attainment. *American Journal of Psychiatry, 152*, 1026-1033.

Knitzer, J., Steinberg, Z., & Fleisch, B. (1990). *At the schoolhouse door: An examination of*

programs and profiles for children with behavioral and emotional problems. New York:

Bank Street College of Education.

Newman, F. L. McGrew, J. DeLiberty, R. N. & Tejeda, M. J (2001). The HAPI-Adult: The

Psychometric Properties of an Assessment Instrument Used to Support Service Eligibility

and Level of Risk-Adjusted Reimbursement Decisions in a State Managed Care Mental

Health Program. Manuscript submitted for publication.

Nunnally, J., & Bernstein, I. H., (1994). *Psychometric Theory* (3rd Edition). New York:

McGraw-Hill, Inc.

Rapp, C. A. (1998). *The strengths model: Case management for people suffering from severe*

and persistent mental illness. New York: Oxford University Press.

Rosenblatt, A., Wyman, N., Kingdon, D., & Ichinose, C. (1998). Managing what you measure:

Creating outcome-driven systems of care for youth with serious emotional disturbances.

Journal of Behavioral Health Services and Research, 25, 177-194.

Stroul, B.A. & Friedman, R.M. (1986). *A System of Care for Children & Youth with Severe*

Emotional Disturbances. (Revised edition). Washington, DC: Georgetown University

Child Development Center, CASSP Technical Assistance Center.

Table 1.

Demographic Data For Those Assessed Initially (Studies 2, 4 and 5), & Those Assessed

Again 90 Days Later

Demographic Characteristic	Initial Assessment N = 781	90 Day Assessment N = 529 (67.7% of 781)
Gender – Percent Female	34.1%	34.4%
Race – Percent		
African American	24.3%	24.6%
Hispanic	2.4%	2.5%
White Non-Hispanic	73.8%	72.2%
Biracial	0.9%	0.8%
Age Group (%, Mean & Standard Deviation)		
Under age 12 (3.17 to 11.99 years)	53.1%, 8.5 yrs & 2.28	56.0%, 8.3 yrs & 2.29
12 to 17.99 years	46.9%, 15.1 yrs & 1.73	44.0%, 15.1 yrs & 1.76
Placement at Time of Assessment (Percent)		
Living With a Parent	57.4%	55.4%
Living with a Relative or Friend	14.2%	13.6%
Living in a Foster Home (of any type)	14.6%	17.6%
Living in a Residential/Inpatient Setting	13.8%	11.3%

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Table 2

Confirmatory Factor Analysis of Time-1 Data (Study 2, n = 723 with Complete HAPI-C)

Factor	Items	All Ages	< 12 yrs	> 12 yrs
Affective Symptoms	Distress	.96	.95	.95
	Anxiety	.63	.62	.60
	Depression	.68	.67	.67
Thinking	Time Task Orientation	.74	.76	.76
	Problem Solving	.71	.81	.81
Family	Family Support of Child's Growth	.51	.48	.48
	Family Sharing Time/Resources with Affection	.49	.49	.45
	Effects of Child's Behavior on Family Interactions	.82	.86	.86
School	School Support Availability	.63	.54	.54
	School Achievement	.66	.69	.69
	Interactions with Classmates/ Peers	.78	.78	.78
	Interactions with Teachers/ Administrators	.78	.77	.77
Disruptive Behaviors	Negative Peer Influences	.65	.68	.66
	Disruptive/ Inappropriate Behaviors	.71	.60	.68
	Risky or Criminal Behaviors	.50	.67	.51
Comparative Fit Index [CFI]		**.983**	**.973**	**.973**
Residual Mean Square Error Adjusted [RMSEA]		**.043**	**.059**	**.059**

Confirmatory Factor Analysis of Time-2 Data (n = 529 with complete HAPI-C)

Factor	Items	All Ages	< 12 yrs	> 12 yrs
Affective Symptoms	Distress	.91	.90	.95
	Anxiety	.77	.78	.73
	Depression	.69	.62	.72
Thinking	Time Task Orientation	.78	.76	.80
	Problem Solving	.83	.82	.82
Family	Family Support of Child's Growth	.42	.39	.45
	Family Sharing Time/Resources with Affection	.43	.49	.50
	Effects of Child's Behavior on Family Interactions	.77	.82	.74
School	School Support Availability	.65	.65	.69
	School Achievement	.68	.71	.63
	Interactions with Classmates/ Peers	.81	.81	.83
	Interactions with Teachers/ Administrators	.78	.75	.79
Disruptive Behaviors	Negative Peer Influences	.72	.76	.66
	Disruptive/ Inappropriate Behaviors	.71	.71	.75
	Risky or Criminal Behaviors	.52	.55	.59
Comparative Fit Index [CFI]		**.992**	**.986**	**.987**
Residual Mean Square Error Adjusted [RMSEA]		**.034**	**.044**	**.043**

Revised 8/11/2003 3:02 PM

Table 3.

Within Factor Item Reliability For Time-1 Data (Study 2)

	All Cases N = 723		Under 12 Yrs N = 384		$\leq$ 12 Yrs N = 339	
	$\forall$	ICC	$\forall$	ICC	$\forall$	ICC
School [4 items]	.822	.820	.809	.839	.836	.835
Family [3 items]*	.762	.770	.758	.798	.790	.794
Affective Symptoms [3 items]	.829	.849	.815	.845	.842	.842
Disruptive Behavior [3 items]	.709	.741	.667	.667	.764	.763
Thinking [2 items]	.738	.774	.768	.768	.701	.700
Substance Use/ Abuse [3 items]	N/A	N/A	N/A	N/A	.829	.833

Within Factor Item Reliability For Time-2 Data

	All Cases N = 529		Under 12 Yrs N = 296		$\leq$ 12 Yrs N = 233	
	$\forall$	ICC	$\forall$	ICC	$\forall$	ICC
School [4 items]	.838	.837	.836	.835	.842	.841
Family [3 items]*	.702	.702	.699	.698	.711	.712
Affective Symptoms [3 items]	.854	.854	.844	.844	.868	.867
Disruptive Behavior [3 items]	.719	.712	.729	.725	.739	.739
Thinking [2 items]	.782	.782	.772	.772	.793	.793
Substance Use/ Abuse [3 items]	N/A	N/A	N/A	N/A	.857	.856

* If the item on Effects of The Child's Behavior on the Family's Interaction were separated from this factor, the $\forall$ coefficient would equal .818 for all 529 children, $\forall$ =.848 for the 296 children under 12 years, and $\forall$ =.786 for 233 children $\geq$ 12 years.

Revised 8/11/2003 3:02 PM

Table 4.

Relationships of the *Global Assessment of Functioning* at Time-1 with the 5 Psychosocial

Factor Scores , and with the Reliance on Services Factor at the Initial Assessment Across

All Ages & By Enrollment Status (New Enrollees & Currently Enrolled).

Predictors	GAF		
			Standardized
	R/r	R^2/r^2	∃ Value
All 529 Cases			
Across All Factors	**.471**	**.272**	
Affective Symptoms	.345	.119	.168
Thinking	.332	.110	.Ns
Family	.241	.058	Ns
School	.438	.192	.313
Disruptive Behavior	.371	.138	Ns
With Reliance on Services	**.308**	**.093**	**.308[a]**
New Enrollees [209]			
Across All Factors	**.481**	**.231**	
Affective Symptoms	.340	.115	.201
Thinking	.346	.119	Ns
Family	.185	.034	Ns
School	.428	.183	.279
Disruptive Behavior	.389	.151	Ns
With Reliance on Services	**.241**	**.058**	**.241[a]**
Current Enrollees [319]			
Across All Factors	**.485**	**.235**	
Affective Symptoms	.366	.134	.148
Thinking	.353	.125	Ns
Family	.308	.095	Ns
School	.457	.209	.335
Disruptive Behavior	.355	.126	Ns
With Reliance on Services	**.365**	**.133**	**.365[a]**

Ns = Non significant value of the standardized ∃.

[a] For the bivariate correlation of GAF with Reliance, the value of ∃ = **R.**

Table 5.

Relationships of the Five Psychosocial Factors and the Reliance on Services Factor at the

Initial Assessment for each type of Current Living Setting With The *Global Assessment of*

Functioning [*GAF*]

Predicators	GAF		
	R/r	R²/r²	Standardized ∃ Value
Living with one or more Parent (n = 295)			
Across All Factors	**.395**	**.142**	
Affective Symptoms	.232	.054	Ns
Thinking	.283	.080	Ns
Family	.208	.043	Ns
School	.380	.144	.303
Disruptive Behavior	.264	.070	Ns
With Reliance on Services	**.335**	**.112**	**.335**
Living with Relatives or Friend (n = 72)			
Across All Factors	**.645**	**.417**	
Affective Symptoms	.500	.250	.410
Thinking	.323	.104	Ns
Family	.101	.010	Ns
School	.439	.193	.374
Disruptive Behavior	.455	.207	Ns
With Reliance on Services	**.345**	**.119**	**.345**
Foster Home (All types) (n = 92)			
Across All Factors	**.580**	**.337**	
Affective Symptoms	.451	.203	.259
Thinking	.474	.225	Ns
Family	.127	.016	Ns
School	.517	.267	.339
Disruptive Behavior	.375	.143	Ns
With Reliance on Services	**.185**	**.034**	**.185**
Group Home/ Residential/ Inpatient/ Detention [n = 69]			
Across All Factors	**.454**	**.206**	
Affective Symptoms	.345	.119	Ns
Thinking	.313	.098	Ns
Family	.333	.111	Ns
School	.402	.162	.162
Disruptive Behavior	.296	.088	Ns
With Reliance on Services	**.118**	**.014**	**Ns**

Table 6.

Relationships of the Change Score for the Five Psychosocial Factors Across All Ages

By Enrollment Status (New Enrollees & Currently Enrolled) With Change Score on

Global Assessment of Functioning **[*GAF* of DSM-IV, Axis V]**

Indicators	GAF		
	R/r	R^2/r^2	Significant Standardized ∃ Value
All 529 Cases			
Across All Factors	**.358**	**.150**	
Affective Symptoms	.253	.064	.118
Thinking	.277	.077	.125
Family	.208	.043	.088
School	.298	.089	.125
Disruptive Behavior	.273	.075	.111
New Enrollees [209]			
Across All Factors	**.453**	**.205**	
Affective Symptoms	.329	.108	.181
Thinking	.283	.080	Ns
Family	.295	.087	.153
School	.329	.108	.179
Disruptive Behavior	.237	.056	Ns
Current Enrollees [319]			
Across All Factors	**.354**	**.125**	
Affective Symptoms	.197	.039	Ns
Thinking	.271	.073	.139
Family	.145	.021	Ns
School	.279	.078	Ns
Disruptive Behavior	.281	.079	.144

ns = Non significant value of the standardized ∃, where the standardized ∃ represents the

direction and strength of the prediction of the change in GAF ratings given a change in

value of the predicting factor.

Table 7.

Relationships of the Psychosocial Factors' Change Scores for each

type of Current Living Setting With The Magnitude of Change in

Global Assessment of Functioning **[*GAF*]**

Predictors	GAF		
	R/r	**R²/r²**	**Significant Standardized ∃ Value**
Living with one or more Parent (n = 295)			
Across All Factors	**.400**	**.160**	
Affective Symptoms	.249	.062	Ns
Thinking	.371	.138	.271
Family	.295	.087	.173
School	.340	.116	.144
Disruptive Behavior	.256	.066	Ns
Living with Relatives or Friend (n = 72)			
Across All Factors	**.422**	**.178**	
Affective Symptoms	.195	.038	Ns
Thinking	.218	.048	Ns
Family	.135	.018	Ns
School	.233	.054	Ns
Disruptive Behavior	.383	.147	.364
Foster Home (All types) (n = 92)			
Across All Factors	**.595**	**.255**	
Affective Symptoms	.417	.174	.317
Thinking	.127	.016	Ns
Family	.282	.080	.193
School	.324	.105	.261
Disruptive Behavior	.118	.014	Ns
Group Home/ Residential/ Inpatient/ Detention [n = 69]			
Across All Factors	**.427**	**.182**	
Affective Symptoms	.089	.008	Ns
Thinking	.279	.078	Ns
Family	-.047	.002	Ns
School	.260	.068	Ns
Disruptive Behavior	.343	.118	.292

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Table 8.

Relationships of Changes in The Substance Use/ Abuse Factor Score with (a) Changes in

GAF, and (b) Changes in the mean of the Five Psychosocial Factor Scores for Children >

12 years who had Substance Abuse Scores < 7 at Time-1.

(a) Changes in Substance Use/Abuse as Related to Change in GAF	**Standardized ∃**	**R^2/r^2**
All youth who meet criteria [n = 93]]	**.286****	**.082**
Enrollment Status		
Newly Enrolled [n = 27]	.111	.012
Currently Enrolled [n = 66]	.421***	.178
(b) Changes in Substance Use/Abuse as Related to Change in Average of Factor Scores		
All youth who meet criteria [n = 93]]	**.454***	**.207**
Enrollment Status	.720**	.519
Newly Enrolled [n = 27]		
Currently Enrolled [n = 66]	.335**	.112

* p < .05, ** p < .01, *** p < .001. All others are not significant.

Table 9.

Correlations between *Reliance on Community Services* at Time 1 and days receiving residential-based services between Time 1 and Time 2 for all youth, newly enrolled youth and currently enrolled youth.

Service variable	Youth sample		
	All youth (n=529)	Newly Enrolled (n=209)	Currently Enrolled (n=319)
Total number of days in all residential-based services	**-.248*****	**-.147***	**-.318*****
Days psychiatric inpatient	-.111*	-.080	-.141*
Days residential treatment	-.112**	-.072	-.139*
Days group emergency shelter	.061	-.070	.094
Days group home	-.173***	-.112	-.218***
Days therapeutic foster care	-.111*	-.069	-.164**
Days specialized foster care	-.104*	-.149*	-.049
Days individual emergency shelter	.021	.038	See Note a

Note a: Correlation cannot be computed because there was no variability in individual emergency shelter use
* p < .05, ** p < .01, *** p < .001. All others are not significant.

Footnotes

[2] All correspondence should be directed to Frederick L Newman, Ph.D., Florida International University via email: newmanf@fiu.edu.

[3] A copy of both the HAPI-Adult and the HAPI-Child can be found on the website:

http://www.in.gov/fssa/servicemental/hap/Hapi-C.pdf.

[4] Kathryn Vanderwater-Pierce of Professional Development Associates, did an outstanding job of performing the final edits of the training manual, developing the training course material and training the "trainers" from the programs on the use of the HAPI-C. The training manual can be found at the same website as the HAPI-C: http://www.in.gov/fssa/servicemental/assess/html.